

1 ~~9~~. A method for sustained neural function modification in a patient comprising:

generating an amplitude modulated signal having at least one frequency component above a physiologic stimulation frequency range; and

applying the amplitude modulated signal to selected neural tissue in the patient for altering a function of the tissue without heating the tissue to temperatures lethal to the tissue, wherein the function remains altered for a given period of time after application of the signal to the tissue is ceased.

2 ~~10~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue reduces pain experienced by the patient.

3 ~~11~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue reduces pain by tremor experienced by the patient.

4 ~~12~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue reduces symptoms of Parkinson's disease experienced by the patient.

5 ~~13~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue reduces symptoms of spasticity experienced by the patient.

6 ~~14~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue reduces symptoms of mood disorder experienced by the patient.

7 ~~15~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue reduces symptoms of epilepsy experienced by the patient.

8 ~~16~~. The method of Claim ~~9~~<sup>1</sup> wherein altering the function of the tissue alleviates motor dysfunction.

<sup>9</sup>  
~~17~~. The method of Claim <sup>1</sup>~~9~~ wherein the at least one frequency component of the amplitude modulated signal alters the function of the tissue.

<sup>10</sup>  
~~18~~. The method of Claim <sup>1</sup>~~9~~ wherein applying the amplitude modulated signal to the tissue comprises engaging the tissue with an electrode coupled with a signal generator generating the amplitude modulated signal.

<sup>11</sup>  
~~19~~. The method of Claim <sup>1</sup>~~9~~ wherein temperatures lethal to the tissue are greater than 45° C.

<sup>12</sup>  
~~20~~. The method of Claim <sup>1</sup>~~9~~ wherein the at least one frequency component has a frequency greater than 300 Hz.

<sup>13</sup>  
~~21~~. An apparatus for sustained alteration of a function of selected neural tissue in a patient comprising a signal generator and an electrode coupled to the signal generator, said signal generator being adapted to generate an amplitude modulated signal having at least one frequency component above a physiologic stimulation frequency range, said electrode being adapted to apply the signal to the tissue, wherein application of the amplitude modulated signal to the tissue alters a function of the tissue while inhibiting heating of the tissue to temperatures lethal to the tissue, and wherein alteration of the function of the tissue persists even after application of the signal to the tissue ceases.

<sup>14</sup>  
~~22~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue reduces pain experienced by the patient.

<sup>15</sup>  
~~23~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue causes the patient to experience a reduction in pain by tremor.

<sup>14</sup>  
~~24~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue causes the patient to experience reduced symptoms of Parkinson's disease.

<sup>17</sup>  
~~25~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue causes the patient to experience a reduced symptoms of spasticity.

<sup>18</sup>  
~~26~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue causes the patient to experience a reduced symptoms of mood disorder.

<sup>19</sup>  
~~27~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue causes the patient to experience a reduced symptoms of epilepsy.

<sup>20</sup>  
~~28~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein altering the function of the tissue alleviates motor disfunction.

<sup>21</sup>  
~~29~~. The apparatus of Claim <sup>13</sup>~~21~~ wherein the at least one frequency component of the amplitude modulated signal alters the function of the tissue.

<sup>22</sup>  
~~30~~. A method for lasting modification of neural tissue function in a patient comprising:

placing an electrode in or near selected neural tissue of the patient;  
generating an amplitude modulated signal and transmitting the signal to the electrode, said signal having at least one frequency component above a physiologic stimulating frequency range for alteration of a function of the tissue without heating the tissue to temperatures lethal to the tissue, said alteration being sustained even after transmission of the signal to the electrode ceases.

<sup>23</sup>  
~~31~~. The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue reduces pain experienced by the patient.

<sup>24</sup>  
~~32.~~ The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue causes the patient to experience a reduction in pain by tremor.

<sup>25</sup>  
~~33.~~ The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue causes the patient to experience reduced symptoms of Parkinson's disease.

<sup>26</sup>  
~~34.~~ The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue causes the patient to experience a reduced symptoms of spasticity.

<sup>27</sup>  
~~35.~~ The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue causes the patient to experience a reduced symptoms of mood disorder.

<sup>28</sup>  
~~36.~~ The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue causes the patient to experience a reduced symptoms of epilepsy.

<sup>29</sup>  
~~37.~~ The method of Claim <sup>22</sup>~~30~~ wherein altering the function of the tissue alleviates motor disfunction.

<sup>30</sup>  
~~38.~~ The method of Claim <sup>22</sup>~~30~~ wherein the at least one frequency component of the amplitude modulated signal alters the function of the tissue.

<sup>31</sup>  
~~39.~~ The method of Claim <sup>22</sup>~~30~~ wherein temperatures lethal to the tissue are greater than 45° C.

<sup>32</sup>  
~~40.~~ The method of Claim <sup>22</sup>~~30~~ wherein the at least one frequency component has a frequency greater than 300 Hz.